

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

All claims currently being amended are shown with deleted text struckthrough or double bracketed and new text underlined. Additionally, the status of each claim is indicated in parenthetical expression following the claim number.

WHAT IS CLAIMED IS:

1-16. (Cancelled).

17. (Original) A method comprising the steps of:

- a) dispersing functionalized carbon nanotubes in a solvent to form a dispersion of functionalized carbon nanotubes;
- b) incorporating the dispersion of functionalized carbon nanotubes into a polymer host matrix to form a functionalized carbon nanotube-polymer composite; and
- c) modifying the functionalized carbon nanotube-polymer composite with radiation, wherein the modifying comprises nonthermal defunctionalization.

18. (Original) The method of Claim 17, wherein the carbon nanotubes are single-wall carbon nanotubes.

19. (Original) The method of Claim 17, wherein the functionalized carbon nanotubes are fluorinated carbon nanotubes.

20. (Original) The method of Claim 17, wherein the dispersion is formed with a solvent selected from the group consisting of alcohols, *N,N*-dimethylformamide, benzene, toluene, xylene, dichlorobenzene, chloroform, dichloromethane, and combinations thereof.

21. (Original) The method of Claim 17, wherein the step of incorporating the dispersion of functionalized carbon nanotubes into a polymer host matrix comprises an incipient

- wetting of polymer material, of a form selected from the group consisting of particles, fibers, and combinations thereof, followed by solvent removal and blending.
22. (Original) The method of Claim 17, wherein the step of incorporating the dispersion of functionalized carbon nanotubes into a polymer host matrix comprises mixing the dispersion with polymeric precursors and polymerizing in situ.
23. (Original) The method of Claim 17, wherein functionalized carbon nanotubes comprise from about 0.001 weight percent to about 99 weight percent of the functionalized carbon nanotube-polymer composite.
24. (Original) The method of Claim 17, wherein functionalized carbon nanotubes comprise from about 0.2 weight percent to about 30 weight percent of the functionalized carbon nanotube-polymer composite.
25. (Original) The method of Claim 17, wherein the step of modifying the functionalized carbon nanotube-polymer composite with radiation comprises radiation selected from the group consisting of ultraviolet radiation, infrared radiation, X-ray radiation, gamma-ray radiation, protons, neutrons, electrons, alpha particles, heavy ions, cosmic radiation, solar wind, and combinations thereof.
26. (Cancelled).
- 26-59. (Cancelled).
- 60 (New) The method of claim 17, wherein the modifying further comprises changes in electrical properties.